

AMENDMENTS TO THE CLAIMS

Please note and consider the claims in the application as identified below, with currently amended claims comprising markings in the form of strikethrough for deletions and underlining for additions.

1. (previously presented) An ice screw for use in ice climbing, said ice screw comprising:
a hollow shaft having a plurality of screw threads formed thereon for securing said ice screw to a body of ice;
a hanger coupled to said hollow shaft for receiving a carabiner and supporting a climber;
and
a flexing crank handle coupled to said hanger and functioning as a crank arm for screwing said ice screw into said body of ice, said flexing crank handle being configured to displace by flex from a resting position to a plurality of flexed positions in response to a load induced thereon, and to automatically return to said resting position without the need for manual manipulation.
2. (original) The ice screw of claim 1, wherein said flexing crank handle comprises a mechanism for facilitating displacement and flexing of said flexing crank handle, said mechanism comprising:
crank support means for attaching said flexing crank handle to said hanger;
a flexing member operable with said crank support means, said flexing member allowing said flexing crank handle to flex and displace in response to an induced load; and
a sleeve rotatable about said flexing member.
3. (previously presented) The ice screw of claim 2, wherein said flexing member comprises a compression spring supported within said sleeve and pre-loaded using a plunger attached to said crank support means that fits within said sleeve, said spring having a pre-determined stiffness.
4. (original) The ice screw of claim 2, wherein said flexing member comprises a spiral spring.

5. (original) The ice screw of claim 2, wherein said flexing member comprises complimentary solid height coil springs attached opposite one another on said hanger.
6. (original) The ice screw of claim 2, wherein said flexing member comprises a solid height coil spring attached within a recess formed in said hanger.
7. (original) The ice screw of claim 2, wherein said flexing member comprises a wire torsion spring.
8. (original) The ice screw of claim 2, wherein said flexing member comprises an internal coil spring.
9. (original) The ice screw of claim 2, wherein said crank support means is selected from the group consisting of a rigid rod pivotally attached to said hanger and a flexible material.
10. (previously presented) The ice screw of claim 2, wherein said crank support means comprises a flexing member attached to said hanger, wherein said flexing member is selected from the group consisting of a string, a cable, a semi-rigid material, or any other similar flexing element.
11. (original) The ice screw of claim 1, wherein said hanger further comprises a flex boundary that dictates the flex path of said flexing crank handle and supports said flexing crank handle in said resting and said plurality of flexed positions.
12. (original) The ice screw of claim 11, wherein said flex boundary of said hanger comprises a flat and a radius portion for supporting said flexing crank handle in said resting, cranking position and said plurality of flexed positions, respectively.
13. (original) The ice screw of claim 11, wherein said flex boundary comprises support surfaces of varying pre-determined distances from an attachment point of said flexing crank handle on said hanger, such that as said flexing crank handle follows along said support surfaces of said flex boundary from said resting position to one or more of said flexed positions, said

flexing crank handle increases in potential energy, thus causing said flexing crank handle to snap back to its said resting position when said load is removed.

14. (original) The ice screw of claim 12, wherein said radius portion is positioned an identified, pre-determined distance from a pivot point on said hanger, and wherein said flat is also positioned an identified, pre-determined distance from a pivot point on said hanger, said distance of said radius portion being greater than said flat by a pre-determined amount, thus causing said flexing crank handle to increase in potential energy as it moves along said flex boundary so that when said load is removed, said flexing crank handle springs back into its said resting position.

15. (original) The ice screw of claim 2, wherein said sleeve is a rotating sleeve that rotates about said flexing member.

16. (original) The ice screw of claim 1, wherein said flexing crank handle reduces cross-loading of an attached carabiner by flexing to allow said carabiner to become disengaged and free itself from said flexing crank handle once said carabiner is loaded.

17. (original) The ice screw of claim 1, wherein said flexing crank handle comprises bi-directional flexing.

18. (original) The ice screw of claim 1, wherein said flexing crank handle comprises vector flexing.

19. (original) The ice screw of claim 11, wherein said flex boundary is a multi-vector flex boundary defined by a knob coupled to said hanger, wherein said knob has a semi-spherical surface shape allowing said flexing crank handle to flex in any direction about said surface to achieve vector flexing.

20. (original) The ice screw of claim 15, wherein said rotating sleeve rotates about a friction-reducing member selected from the group consisting of a bearing, a bushing, and any other similarly functioning device.

21. (previously presented) A flexing crank handle for use with an ice screw, said flexing crank handle comprising:

crank support means for attaching said flexing crank handle to a hanger of an ice screw;

and

a flexing member operable with said crank support means and configured to enable said flexing crank handle to displace by flex in response to an induced load, and to automatically return to said resting position without the need for manual manipulation.

22. (original) The flexing crank handle of claim 21, further comprising a sleeve coupled to said flexing member at an end opposite that attached to said hanger.

23. (original) The flexing crank handle of claim 21, wherein said sleeve is a rotating sleeve.

24. (previously presented) The flexing crank handle of claim 21, wherein said crank support means is a flexible member.

25. (previously presented) The flexing crank handle of claim 21, wherein said crank support means comprises a rigid rod that pivotally attaches to said hanger.

26. (original) The flexing crank handle of claim 21, wherein said flexing member comprises a compression spring.

27. (original) The flexing crank handle of claim 21, wherein said flexing member comprises a spiral spring.

28. (original) The flexing crank handle of claim 21, wherein said flexing member comprises complimentary solid height coil springs attached opposite one another on said hanger.

29. (original) The flexing crank handle of claim 21, wherein said flexing member comprises a single solid height coil spring attached within a recess formed in said hanger.

30. (original) The flexing crank handle of claim 21, wherein said flexing member comprises a wire torsion spring.

31. (original) The flexing crank handle of claim 21, wherein said flexing member comprises an internal coil spring.

32. (original) The flexing crank handle of claim 22, wherein said flexing member comprises a compression spring having a pre-determined stiffness and that is supported on at one end by said sleeve, and a plunger for supporting said spring in a pre-loaded condition, said plunger attached to said rigid rod and fitting within said sleeve, said flexing crank handle comprising a resting position and a plurality of flex positions defined as said flexing crank progresses about a designated and pre-determined flex boundary defined by said hanger.

33. (previously presented) A method for correcting existing and potential cross-loading of a carabiner coupled to an ice screw inserted into a body of ice, said method comprising the steps of:

obtaining an ice screw, said ice screw comprising:

a hollow shaft having a plurality of screw threads formed thereon for securing said ice screw to a body of ice;

a hanger coupled to said hollow shaft for receiving a carabiner and supporting a climber;

a flexing crank handle coupled to said hanger in a substantially stationary manner, said flexing crank handle functioning as a crank arm for screwing said ice screw into said body of ice, said flexing crank handle being configured to displace by flex from a resting position to a plurality of flexed positions in response to a load induced thereon, and to automatically return to said resting position without the need for manual manipulation;

grasping said flexing crank handle and screwing said ice screw into said body of ice; and

coupling a carabiner to said hanger, wherein said carabiner, in the event of cross-loading, causes said flexing crank handle to flex to allow said carabiner to disengage and free itself from said flexing crank handle and to assume a normal operating orientation.